RADIO SYNTHESIS MAPS OF LARGE SUPERNOVA REMNANTS

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Several large (at least $0.^{o}5$ diameter) supernova remnants (SNR) located at $2.^{o}5$ or more from the galactic plane have been mapped with the Westerbork Synthesis Radio Telescope (WSRT) at 49 cm. The sample, which includes IC443, DA530, VRO42.05.01, CTA1 and OA184, is particularly suitable for complementary studies in other spectral regimes. By choosing objects at relatively high galactic latitudes we have consciously selected SNR which are likely to suffer less than average extinction and are probably nearer to the sun than most. This makes them particularly attractive for optical and X-ray studies which, along with IR and further radio observations, are either in progress or being planned. These are summarized in Table 1.

Table 1

SNR	Observation	Date
IC443	WSRT 49 cm continuum	Spring 1982
	WSRT 21 cm HI line	Summer 1982
	IRAS 4 band IR mapping	proposed
	optical velocity field mapping	planned
DA530	WSRT 49 cm continuum	Spring 1982
	WSRT 21 cm continuum	planned
	EXOSAT soft X-ray mapping	planned
VRO 42.05.01	WSRT 49 cm continuum	Spring 1982
	WSRT 21 cm continuum	planned
	IRAS 4 band IR mapping	proposed
	optical velocity field mapping	planned
	EXOSAT soft X-ray mapping	planned
CTA1	WSRT 49 cm continuum	Spring 1982
OA184	WSRT 49 cm continuum	Spring 1982.

J. Danziger and P. Gorenstein (eds.), Supernova Remnants and their X-Ray Emission, 373–376.

One aspect of the project is to search for small scale radio spectral index and polarization variations to investigate the particle acceleration mechanism and magnetic field structure. Another aim is to study how SNR interact with their environment. Neutral hydrogen cloudlets associated with IC443 which were discovered by De Noyer (1978) are being investigated in greater detail. We also hope to study how the SNR shock affects an adjacent molecular cloud by observing the expected IR emission. In several intermediate age remnants it should be possible to examine the dynamics using high resolution optical spectra of their filaments. Finally, we plan to map the hot thermal gas through the soft X-ray emission from several remnants to further clarify their evolutionary state and the prevailing physical processes.

Figure 1. The 49 cm map of IC443.

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In addition, there are a number of general questions regarding SNR structure which call for clarification. As was clear from earlier work (e.g. Duin and Van der Laan, 1975), there is often an excellent correlation between the (thermal) optical nebulosity and (nonthermal) radio brightness distribution. IC443 (Figure 1) is a fine example of this. Another feature seen in several remnants including IC443 is for the radio emission on one side of the rim to be dominant. In a few objects such as DA530 (Figure 2), by way of contrast, the shell appears to be bracketed by two symmetric arcs of roughly equal brightness.

The tentative and rather general nature of this report reflects the very preliminary stage of much of the data reduction. Results on the various remnants will be published as the work progresses.

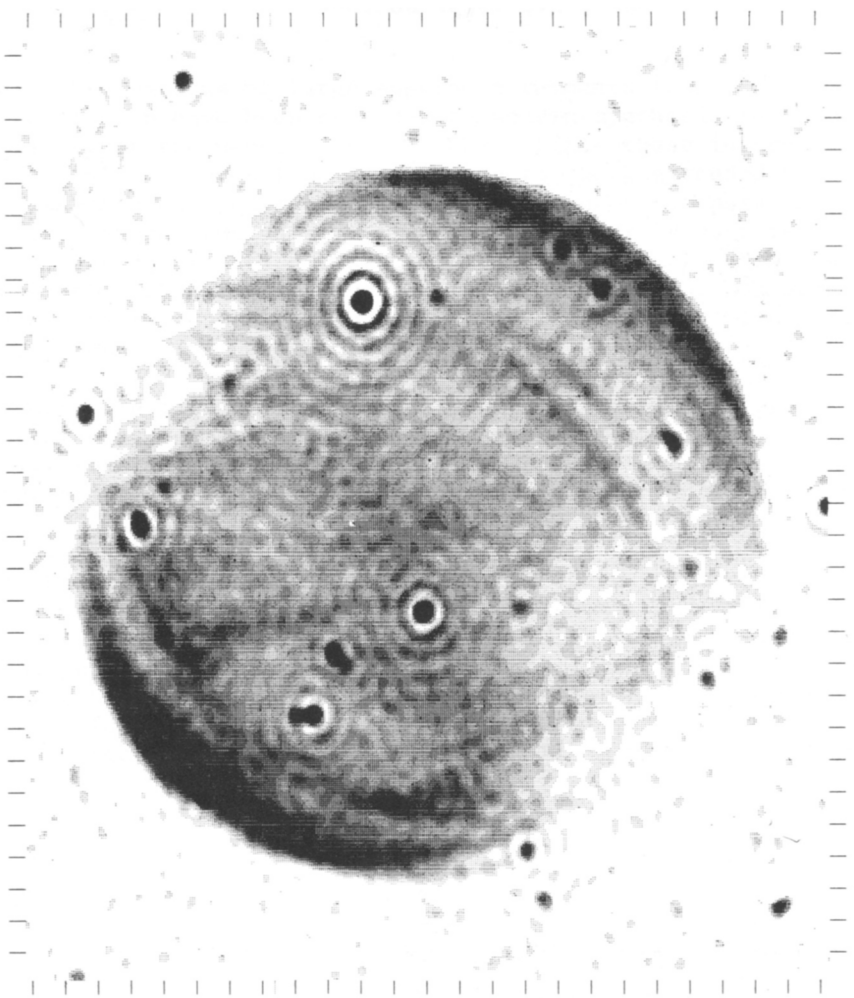

Figure 2. The 49 cm map of DA530.

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